

1 Head Hydra 1000

Part Number: MA30124
Year of
Construction: 2007
Customer: Various
Manufacturer:  **Avdel**[®]
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Rexdale, Ontario
Canada
M9W 1M3
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Homepage: <http://www.avdel-global.com>

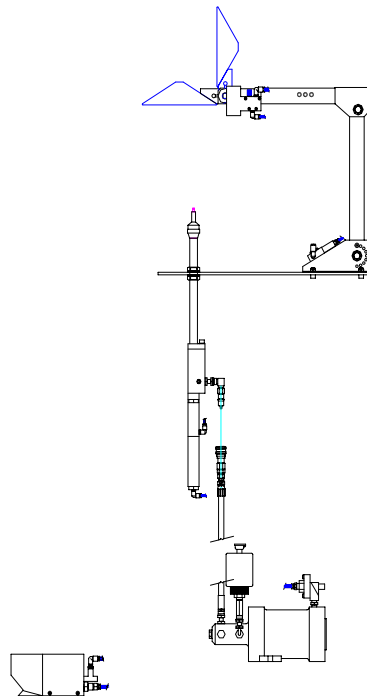











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1) Symbols




The following signs may be used in this instruction manual:

	Important notice
	Warning notice
	Eye protection must be worn
	Safety gloves should be worn for jobs involving sharp-edged work pieces
	Lock-out/tag-out before working
	Disconnect power supply before servicing
	Danger, pinch point
	Recycle every component possible
	Do not put in domestic waste
▲ =	Safety signs in accordance with Council Directive 92/58/EEC annex 2 of 24 June 1992

2) Safety Instructions



The following safety guidelines should be adhered to by anyone operating the MA30124 Speed Fastening System machine.

- 1 Operation of the machine is restricted for its intended and designed use with approved Avdel fasteners.
- 2  It is recommended that eye protection be worn while operating the machine.
- 3  Safety gloves should be worn for jobs involving sharp-edged work pieces.
- 4 Only use Avdel approved spare parts for machine repair.
- 5 The machine shall at all times be maintained in accordance with the applicable safety standards to guarantee reliable working.
- 6 The state of the machine must at all times conform to the applicable health and safety legislation. Any questions concerning machine and operator safety should be directed to Avdel.
- 7 Before starting the machine, the operator must always check that safety devices are properly installed, working and operationally safe.
- 8 Ensure that venting devices are not covered or blocked.
- 9 Technical modifications to the machine that are not performed, or expressly confirmed by Avdel in writing, will lead to the scope of liability and warranty being restricted.
- 10 It is recommended that hydraulic components and lines must be depressurized before any maintenance or repair work is carried out on them.
- 11 It is recommended that pneumatic components and lines must be disconnected from the compressed air supply before any maintenance or repair work is carried out on them.
- 12 The machine must only be operated by personnel that have received appropriate training and instruction. The applicable health and safety regulations must be observed.
- 13 It is recommended that this instruction manual be kept in the immediate vicinity of machine, accessible and legible to staff.
- 14  Never point the tool portion of the machine at another operator or person.
- 15 When free firing fasteners point tool into a wastebasket prior to depressing the actuation device.

3) General Liability

Claims under warranty and liability for personal injury and material damage are excluded if such claims are due to one or more of the following causes:

- The machine is not being used for its intended purpose.
- Incorrect installation, commissioning, operation and maintenance of the machine.
- Operating the machine in spite of defective, incorrectly installed or non-functioning safety devices
- Structural alteration without the express confirmation of Avdel
- Poor monitoring of individual parts subject to wear
- Incorrect repair or maintenance of the machine
- Disasters caused by the action of foreign objects

Duty of Owner

The owner of the machine undertakes to

- Allow only those persons familiar with fundamental health and safety regulations and who have been instructed in the handling of the machine to work with the machine.
- Provide the necessary safety clothing for operating staff of the machine
- Regularly test the safety devices provided on the machine.
- Ensure that operators read and understand the instruction manual, especially the safety rules and warning advice.
-

Duty of Operators

The operators of the machine undertake to

- Observe fundamental health and safety regulations
- Read the instruction manual, especially the safety rules and warnings, and clarify anything they do not fully understand
- Report damage to the machine without delay and stop the machine immediately in the event of danger

4) Manufacturing Contact Information

The manufacturer of the machine is:

***Avdel Canada, a Division of Acument Canada Ltd.,
87 Disco Road
Rexdale, Ontario
Canada
M9W 1M3
Phone: 416-679-0622
Fax: 416-679-0678***

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- Published
- Passed on in any other form

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5) Operating Instructions

5.1) Machine Start-up



The following instructions should be followed during machine start up.

1. Place Speed fastening Unit in the assembly location.
2. Connect main air supply (3/8" min inlet size). **80-90 PSI**
3. Tool should be supplied with clean, dry air only.

5.2) Machine Operation



The following instructions should be followed when operating the machine.

1. Raise Eye Guard to disengage tails jaws.
2. Gently pull on protruded spring(s) to remove mandrel(s).
3. Remove follower / spring.
4. Insert rivets (Pod) onto on mandrel.

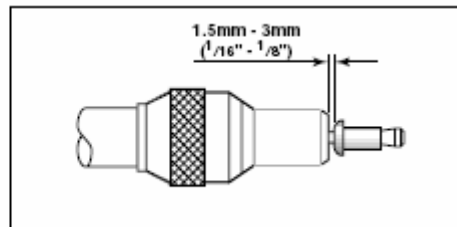
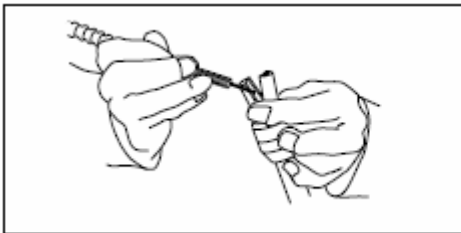
Slide pointed end of pod onto pointed end of mandrel

5. Peel off paper
6. Install follower / spring

Ferrell side of spring towards the pod

7. Carefully push loaded mandrel through nose assembly.
8. Set 1/8" gap between face of nose halves and head/flange of the first fastener.
9. Lower Eye Guard to engage tails Jaws.


Repeat Lines 1 – 9 to Reload

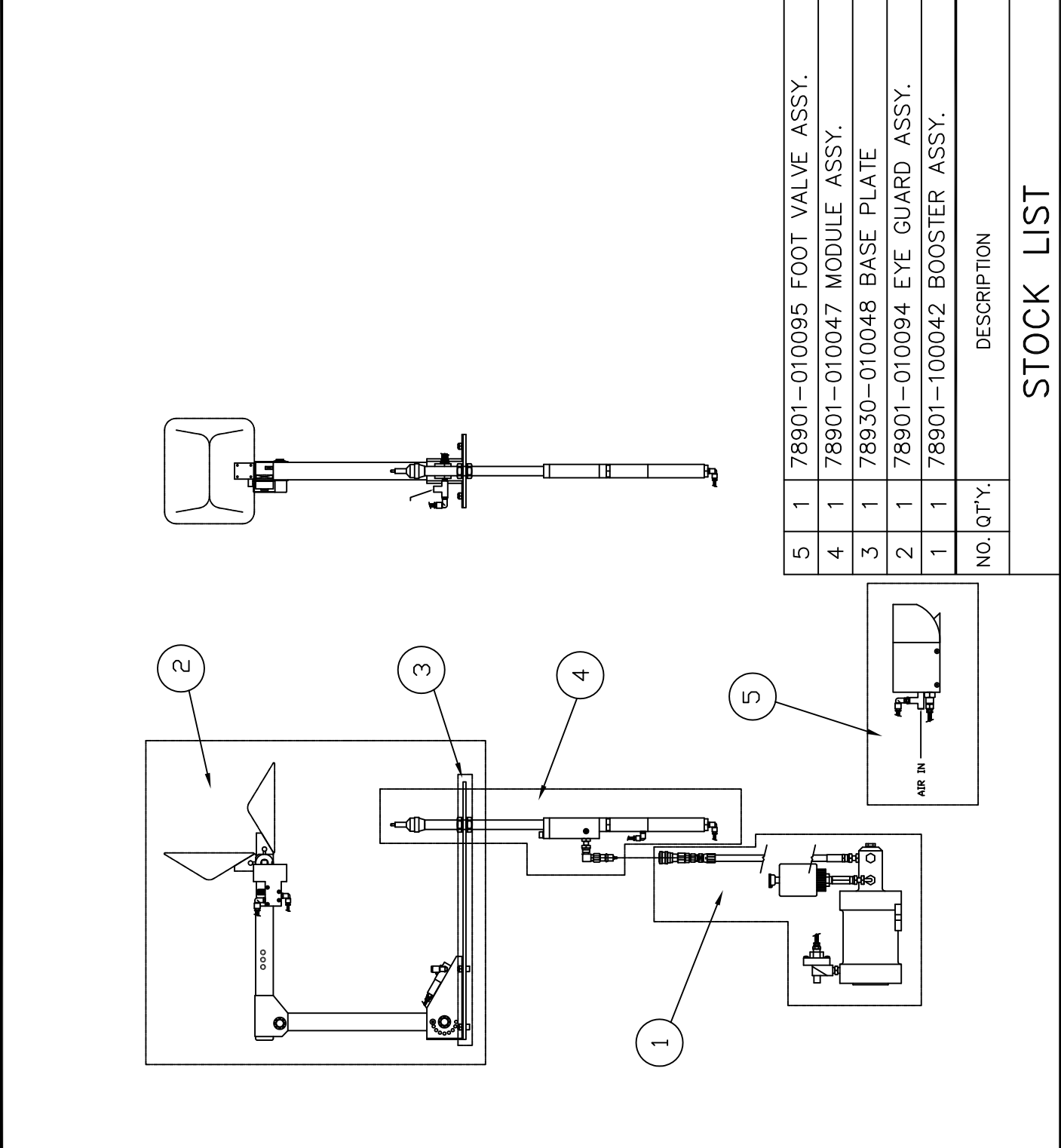


6) Nose Equipment

See attached guide in Additional information.

7) Tool Assembly Drawings & Maintenance

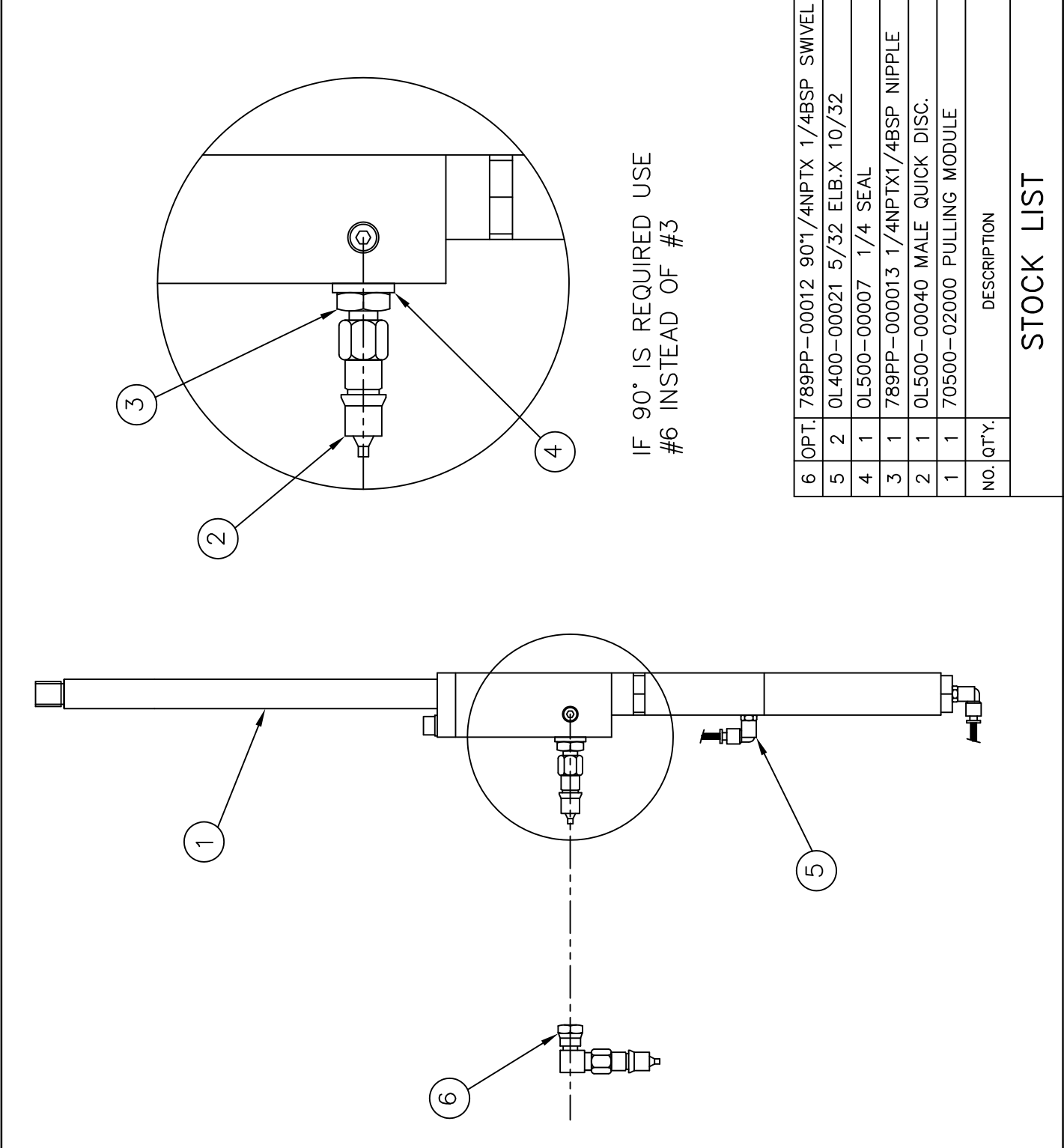
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DRAWN:	K.BEVAN	CHECKED:	RAY R.
DATE:	03/31/05	APPROVED:	
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SPEC.	MATERIAL:		
SPEC.	HEAT TREAT:		
SPEC.	FINISH:		
 Avdel® An Acument™ Global Technologies Company			
TITLE: STANDARD PARTS BREAKDOWN			
DRAWING NO. MA30124		REV A	



The diagram illustrates the air control system for the front door. It shows the air intake (AIR IN) entering the system, passing through a filter (1), a solenoid valve (2), and a pressure switch (3). The air then flows through a hose (4) to the door actuator (5).

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6	OPT.	789PP-00012	90*1/4NPTX	1/4BSP	SWIVEL
5	2	OL400-00021	5/32	ELB.X	10/32
4	1	OL500-00007	1/4	SEAL	
3	1	789PP-000013	1/4NPTX1/4BSP	NIPPLE	
2	1	OL500-00040	MALE	QUICK DISC.	
1	1	70500-02000	PULLING	MODULE	
NO.	QTY.	DESCRIPTION			

STOCK LIST

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FILLET: .5 MAX

TOLERANCES:

X = ±.3

XY = ±.13

XYZ = ±.013

ANGULAR: ±0'30"

3.2/3.2

OUTSIDE

INSIDE

CHECKED: RAY

APPROVED:

SCALE: NTS

SPEC. MATERIAL:

SPEC. HEAT TREAT:

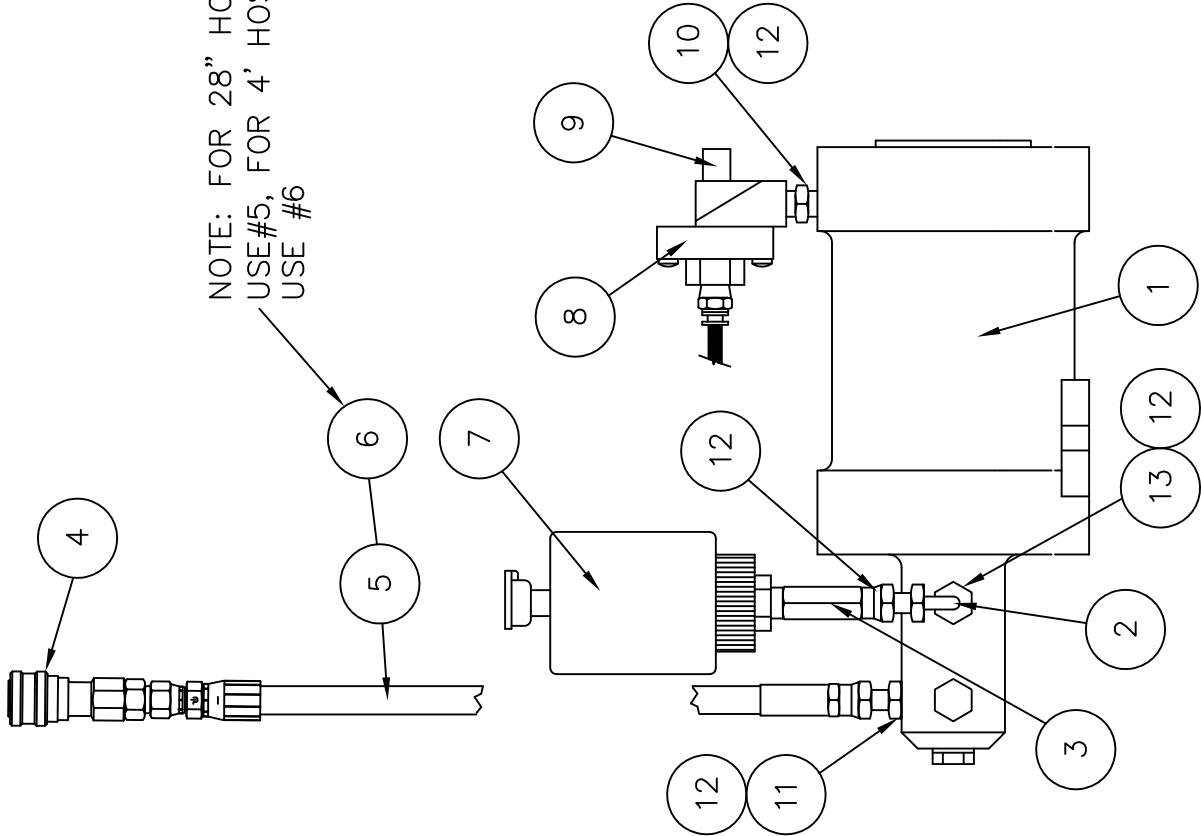
SPEC. FINISH:

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An AcumentTM Global Technologies Company

TITLE: SPEED FASTENING
MODULE WITH FITTINGS

DRAWING NO. 78901-010047	REV A
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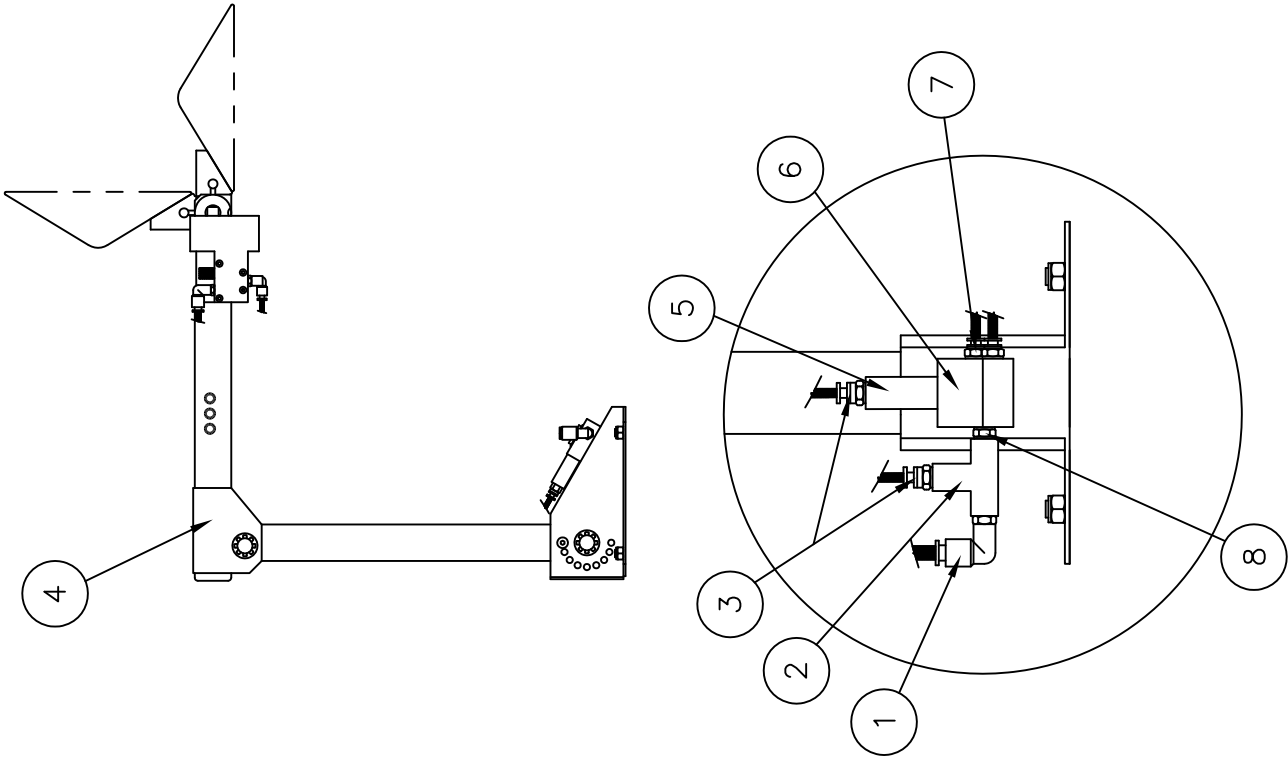
14	1	7992-0006	MPO 30 PRIMING OIL
13	1	789PP-000082	NIPPLE FOR #1 BOOSTER
12	4	0L500-00007	1/4 BSP SEAL
11	1	0L500-00012	1/4 BSP MALE FITTING
10	1	789PP-000013	NIPPLE BSP X NPT
9	1	07005-00344	SILENCER
8	1	07005-00256	QUICK EXHAUST
7	1	0L600-00321	OIL CUP 10 OZ.
6	1	0L100-00030	HYDRAULIC HOSE 4'
5	1	0L100-00036	HYDRAULIC HOSE 28"
4	1	0L500-00041	QUICK DISC. FEMALE
3	1	789PP-000043	COUP. 1/4BSPX1/4NPT
2	1	0L500-00010	90° 1/4BSP MALE/FEM.
1	1	07005-00514	#1 BOOSTER

NO.	QTY.	DESCRIPTION
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STOCK LIST


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DRAWN: K. BEVAN		CHECKED: RAY R.	
DATE: 04/19/05		APPROVED:	
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SPEC. MATERIAL:			
SPEC. HEAT TREAT:			
SPEC. FINISH:			
 Aydel[®] An Acument [™] Global Technologies Company			
TITLE: BOOSTER ASSEMBLY			
DRAWING NO. 78901-100042		REV A	

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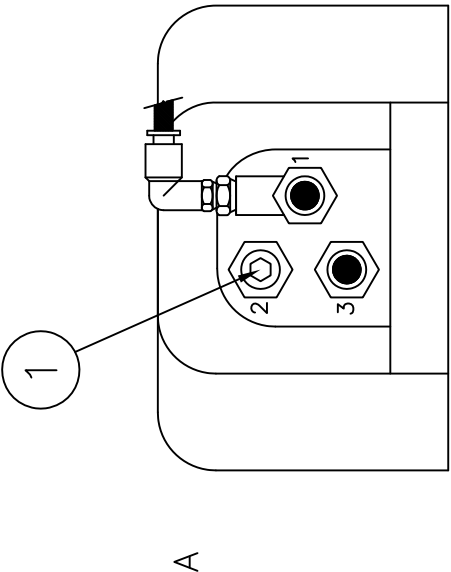
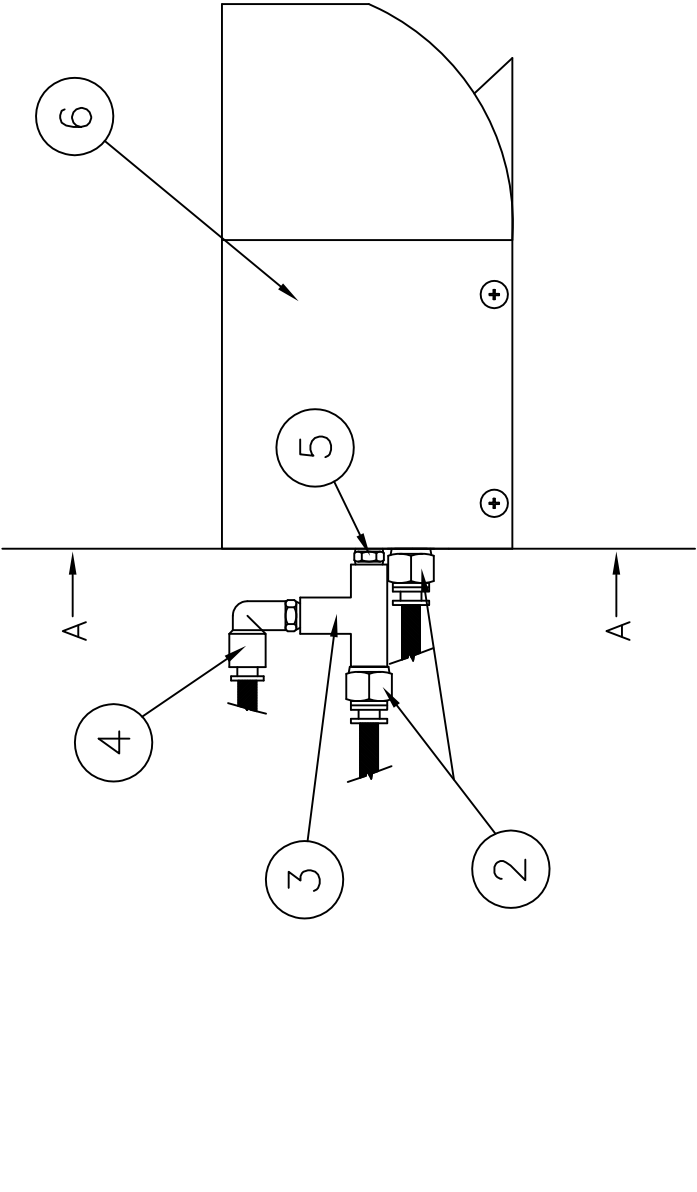


8	1	OL400-00016 NIPPLE 1/8 NPT
7	2	FITTING 1/8 NPT X 4MM
6	1	OL300-00015 CONTROL VALVE
5	1	OL300-00016 AIR ACTUATOR
4	1	07273-00900 EYE GUARD ASSY.
3	2	FITTING 1/8 NPT X 6MM
2	1	OL400-00014 TEE 1/8 NPT FEMALE
1	1	FITTING 90° 1/8 NPT X 6MM
NO. QTY.		DESCRIPTION

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DRAWN: K. BEVAN		CHECKED: RAY R.	
DATE: 05/18/05		APPROVED:	
NEXT ASSEMBLY:		SCALE: NTS	
SPEC. MATERIAL:			
SPEC. HEAT TREAT:			
SPEC. FINISH:			
 Avdel[®] An Acument [™] Global Technologies Company			
TITLE: EYE GUARD ASSY. FOR SPEED FASTENING			
DRAWING NO. 78901-010094		REV A	


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6	1	OL300-00017	FOOT VALVE
5	1	OL400-00017	NIPPLE 1/4 NPT
4	1	FITTING 90° 1/4 NPT X 1/4"	
3	1	OL400-00012	TEE 1/4 NPT FEMALE
2	2	FITTING 1/4 NPT X 1/4"	
1	1	OL400-00007	1/4 NPT PLUG

NO. QTY.	DESCRIPTION
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STOCK LIST

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DATE: 05/18/05		APPROVED:	
NEXT ASSEMBLY:		SCALE: NTS	
SPEC.	MATERIAL:		
SPEC.	HEAT TREAT:		
SPEC.	FINISH:		
 An Acument™ Global Technologies Company			
TITLE: FOOT VALVE ASSY. FOR VARIOUS			
DRAWING NO. 78901-010095		REV A	

7.1) Dismantling Tool

DISMANTLE TAIL JAWS

- With the aid of Spanners 7900-0522, remove adaptor (24) and 'Tail Jaw Assembly' from Tail Jaw Housing (42). The Turret Jaws (19) will be exposed. Care should be taken not to misplace the Jaws (19).
- Clean and inspect Jaw Housing (45). It will be necessary to remove Jaw Housing only if damaged. To remove Jaw Housing (45) use Jaw Housing Key 7900-0194 and Spanners 7900-0522.
- Clean all items, inspect and replace if necessary. Re-grease using Molythium based Grease 7992-00020, and reassemble.

DISMANTLE TAIL JAW ASSEMBLY

- Remove Adaptor (24) and 'Tail Jaw Assembly' as described above.
- Remove Adaptor (24) from Front Cylinder (44) using spanners 7900-0522. Remove Banjo (43) and 'O' Rings (9).
- With Spanners 7900-0522, remove Turret (22) from Piston Rod (49).
- With Spanners 7900-0522, remove Front Cylinder (44) from Rear Cylinder (28). Remove Front Piston Rod (49) and Piston (26). Remove Circlip (16) and remove Piston from Piston Rod. Remove 'O' Ring (4) from Front Cylinder (44). Remove 'O' Rings (7) from Front Piston Rod (49).
- Note:** Removal of 'O' Rings from internal recesses requires the use of a pointed instrument. Care must be taken not to damage sealing surfaces. Remove 'O' Ring (8) from Piston. Remove 'O' Ring (10) from Piston.
- Remove Seal Retainer (30). With Spanners remove front Rear Cylinder (28) from back Rear Cylinder (28). Remove Piston Rod (27), Circlip (16), Piston (26) and 'O' Ring Seals as described above
- Remove Seal Retainer (30). With Spanners, remove back Rear Cylinder (28) from Rear Plug (29). Remove Seal Retainer (30). Remove Piston Rod, Circlip, Piston and 'O' Ring Seals as described above.
- Replace worn or damaged parts as required. Clean all parts thoroughly, lubricate Seals and Cylinder Bores with Molythium Grease 7992-00020. Re-assemble in reverse order.

DISMANTLE HYDRAULIC BODY ASSEMBLY

- Using Hex Wrench 7900-0013 remove Button Head Bleed Screws (1) and Seals (6) from Body (38). Allow Hydraulic Oil to drain from Cylinder Body.
- Using Hex Wrench 7900-0226 remove Barrel Assembly (2,11,13,20,21,23,25,31,32,33,34,35,36 and 37).
- Using Spanners 7900-0434 to prevent the Body (38) from rotating, and with the aid of Spanners 7900-0433 remove Tail Jaw Housing (42) and Tail Jaw Assembly.
- With Spanners 7900-0522, remove Locknut (46) and Piston Nut (45). Remove Buffer Stops (48).
- NOTE:** It is important that the same number of Buffer stops removed, are replaced on Assembly.
- Remove Piston (41). Remove Lip Seal (15) and Guidance Tape (39), clean all parts thoroughly, inspect for damage, replace if necessary.
- Remove Lip Seal (14) and Guidance Tape (40) from Body (38), clean and inspect for damage, replace if necessary.
- NOTE:** Extreme care must be taken when removing Seals, to avoid damage to Sealing Surfaces.
- Inspect Piston Diameters, Body Cylinder Bore, for wear and damage. Replace Lip Seals and Guidance Tape in the correct relative positions. Lubricate Seals and Cylinder Bore with Molythium Grease 7992-00020.

RE-ASSEMBLE HYDRAULIC BODY ASSEMBLY

- Re-assemble in reverse of Dismantling with the aid of Assembly Bullet 7900-0669, positioned on the thread of the Piston (41).

CURSOR

Clean and oil mechanical cursor assembly **5** occasionally with a little light oil.

IMPORTANT

Check the tool against daily and weekly servicing.
Priming is ALWAYS necessary after the tool has been dismantled and prior to operating.

7.3) BOOSTER MAINTENANCE

Instructions

- The Booster 07005-00514 requires little or no maintenance under normal conditions
- The MPO 30 Hydraulic Oil in Reservoir should be changed periodically if it looks Cloudy or Grey
- Seal Kit 07005-01096 is available from Avdel.

8) Priming

PRIMING

Priming is ALWAYS necessary after the tool has been dismantled and prior to operating. It may also be necessary to restore the full stroke after considerable use, when the stroke may be reduced and fasteners are not fully placed by one operation of the trigger.

OIL DETAILS

The recommended oil for priming is M.P.O. 30 available in 1 litre (part number 07992-00006).

M.P.O. 30 SAFETY DATA	
FIRST AID SKIN: Wash thoroughly with soap and water as soon as possible. Casual contact requires no immediate attention. Short-term contact requires no immediate attention. INGESTION: Seek medical attention immediately. DO NOT induce vomiting. EYES: Irrigate immediately with water for several minutes. Although NOT a primary irritant, minor irritation may occur following contact. FIRE Suitable extinguishing media: CO ₂ , dry powder, foam or water fog. Do not use water jets.	ENVIRONMENT WASTE DISPOSAL: Through authorised contractor to a licensed site. May be incinerated. Used product may be sent for reclamation. SPILLAGE: Prevent entry into drains, sewers and watercourses. Soak up with absorbent material. HANDLING Wear eye protection, impervious gloves (e.g. of PVC) and a plastic apron. Use in well-ventilated area. STORAGE No special precautions.
INGREDIENTS/IDENTITY INFORMATION Proprietary: NO Ingredient: MINERAL OIL (EXPOSURE REGULATED AS 'OIL MIST') Ingredient Sequence Number: 01 NIOSH (RTECS) Number: PY8030000 CAS Number: 8012-95-1 OSHA PEL: 5 MG/M3 ACGIH TLV: 5 MG/M3/10 STEL;9192	PHYSICAL/CHEMICAL CHARACTERISTICS Appearance And Odor: CLEAR BROWN LIQUID; CHARACTERISTIC OIL ODOR. Boiling Point: 300F,149C Vapor Pressure (MM Hg/70 F): N/A Vapor Density (Air=1): N/A Specific Gravity: 0.873 Evaporation Rate And Ref: <1 (N-BUTYL ACETATE=1) Solubility In Water: 0.1% Percent Volatiles By Volume: 0%
FIRE/EXPLOSION HAZARD DATA Flash Point: 470F,243C Flash Point Method: COC Lower Explosive Limit: NONE Upper Explosive Limit: NONE Extinguishing Media: CO ₂ , DRY CHEMICALS Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N). Unusual Fire And Expl Hazards: NONE	REACTIVITY DATA Stability: YES Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER. Materials To Avoid: STRONG ACIDS OR ALKALIS WILL AFFECT QUALITY. Hazardous Decomp Products: CO, SO ₂ , WITH INCOMPLETE COMBUSTION. Hazardous Poly Occur: NO Conditions To Avoid (Poly): NOT RELEVANT

8.2) Priming Instructions

PRIMING HYDRAULIC SYSTEM

It is essential for the satisfactory working of the pulling module(s) that there is no air present in the hydraulic system. The removal of all air from the system is referred to as priming.

PRIMING STEPS :

- Lower module to the floor
- Check oil level at the booster and refill if required
- Remove the oil bleed plug and seal from the module
- Wait until the oil flows freely from module with no air bubbles present
- Replace seal and bleed plug

Routine priming

During normal every day operation it may be necessary to prime the hydraulic system , i.e. After a module change , if the reservoir is allowed to run dry or if the hydraulic fitting(s) become loose. When this is required follow the steps described below.

NOTE: READ THE ENTIRE INSTRUCTIONS BEFORE ATTEMPTING THIS PROCEDURE

1. Remove the bleed screw and seal from the side of the module and situate a suitable container by the hole to catch the oil.
2. Trigger (foot valve) the tool and hold it on. Oil will squirt out of the priming hole very aggressively, so be sure the container is in front of the priming hole. **Reducing the main incoming air pressure (20-25 psi) will lower the rate of speed the oil comes out of the priming hole.**
3. Replace the priming seal and screw.
4. Release the trigger (foot valve) mechanism. Oil will then be drawn from the oil reservoir.
5. Top up the oil reservoir.
6. Repeat steps 1-5 until clean air free oil comes out of the priming hole.
7. Regulate to proper air pressure upon completion of prime.

9) Preventative Maintenance

Prescribed Action	Daily	Weekly	Monthly
Inspect mandrels for excessive wear and straightness. Discard if worn or bent.	✓		
Inspect Follower springs for wear/damage. Discard if worn or bent.	✓		
Inspect mechanical cursor. Clean and lightly oil.		✓	
Inspect Hydraulic Fittings for oil leaks.		✓	
Inspect air cylinders, valves, airlines, and connections for leaks.		✓	
Visually inspect all aspects of tooling for wear and/or damage. Replace or repair as required.		✓	
Ensure regulator is set to 80-90 PSI.		✓	
Ensure Oil reservoir is minimum 1/2 full.		✓	
Remove and clean Tail Jaw Assembly			✓
Inspect Front Jaws for wear/damage			✓

10) Troubleshooting Guide

Fault	Possible Cure
Excessive Tail Jaw Wear	<ul style="list-style-type: none"> • Ensure correct nose equipment has been selected for the fastener and hole combination • Check for air leaks and ensure correct air pressure and volume is available • Ensure correct rivet has been selected for the grip range being fastened
Mandrel Slipping in Tail Jaws	<ul style="list-style-type: none"> • Check for wear on Tail Jaws. Replace if necessary. • Check to ensure sufficient volume and pressure of air supply is maintained. • Ensure there are no air leaks to the Tail Jaws • Ensure Tail Jaw operating valve is switching
Double Feeding	<ul style="list-style-type: none"> • Check for Mandrel Slip • Check nose equipment for proper assembly
Not Feeding Rivets	<ul style="list-style-type: none"> • Ensure the correct gap is set between rivet head and tip of nose jaws. • Ensure the cursor is installed properly. • Clean and lightly oil mechanical cursor assembly. • Evaluate follower spring • Check nose equipment compatibility. • Weak / Worn cursor collar
Incomplete stroke of module	<ul style="list-style-type: none"> • Speed fastening Module(s) requires priming. See priming instructions. • Low air pressure and/or volume

11) Transport and Storage

Transportation Data

The machine's dimensions and weight can be found under machine technical specifications.

Loading and unloading



Do not tilt the machine during transport, loading and unloading. Observe the laws and instructions valid for your country when transporting hazardous substances.

The machine is supplied with suitable transit packing; a forklift truck of sufficient lifting capacity for the gross weights (➡ *Specifications*) is required to unload the system and transport it to the operational location.

Carefully remove all the transit packaging from the system.



The customer is committed to check the entire equipment as delivered for signs of damage. If any damage is determined, it must be reported immediately to Avdel.

If damage is found, it must be documented (e.g. by photograph) to help render any description thereof more comprehensible.

Storage

A dry location should be chosen for temporary storage of the machine. Depending on the storage time, sensitive parts must be preserved and protected against soiling.

12) Waste Disposal

For any kind of waste disposal, please observe the applicable national laws and regulations. Please consider the following.



Recycle every component possible



Do not put batteries in domestic waste

WASTE DISPOSAL

The various components of the machine must be disposed of separately. First remove fuel and oil from the machine.



Hydraulic oil presents a hazard to ground water. Uncontrolled draining or incorrect disposal is liable to prosecution (environmental liability law).

Batteries and accumulator must be disposed of in accordance with special laws and regulations.



Batteries and accumulator must be treated separately from other waste and must not be put in domestic waste. Contravention is liable to prosecution.

The other components of the machine must be disposed of in accordance with applicable national laws and regulations.

Because of potential environmental damage, we recommend that a professional company dispose of the machine. The old machine cannot be returned to the manufacturer free of charge.

ADDRESSES

For any questions concerning waste disposal please contact

Environment Canada
351 St. Joseph Boulevard
Hull, Quebec
K1A 0H3

Or consult your regional waste management body.



13) Recommended Spare Parts List

Item	AVDEL #	Description	Rec. Spares		
Nose Equipment					
78901-100041 Booster (25:1) Sub Assembly					
2	07005-00344	Silencer	1		
6	07992-00006	MPO 30 Hydraulic Oil	2 liters		
7	0L500-00007	Oil Seal	1		
78901-010047 70500 Module Sub Assembly					
1	0L400-00021	Pneumatic Elbow	2		
5	0L500-00007	Oil Seal	1		
6	70500-02000	Speed fastening Module	1		
70500-02000 Module Assembly					
Item	AVDEL #	Description	Rec. Spares		
1	07003-00114	10-24 UNC Button Head Screw	2		
5	07003-00028	O Ring Seal	4		
6	07003-00033	Bonded Seal	4		
14	07003-00242	Hydraulic Seal	4		
15	07003-00243	Hydraulic Seal	4		
19	07151-00403	Turret Jaw (set)	4		
20	07271-01100	Cursor	1		
25	07003-00036	O Ring Seal	4		
36	70500-02004	Spring	1		
39	70500-02007	Piston Guide Tape - Long	2		
40	70500-02008	Piston Guide Tape - Short	2		
48	70500-02016	Buffer	2		
Recommendation Quantities based on a 3 Head System					

14) Additional Information List

1. Maintenance and Repair



The machine must be secured against being switched back on before any maintenance or repair work is carried out! (E.g. locked out)

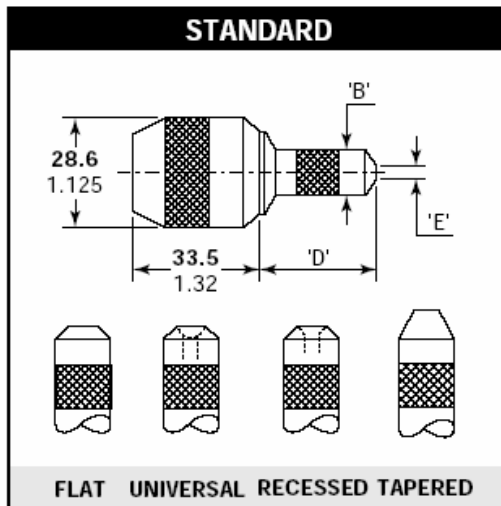


Specialized and trained staff must do maintenance or repair work!

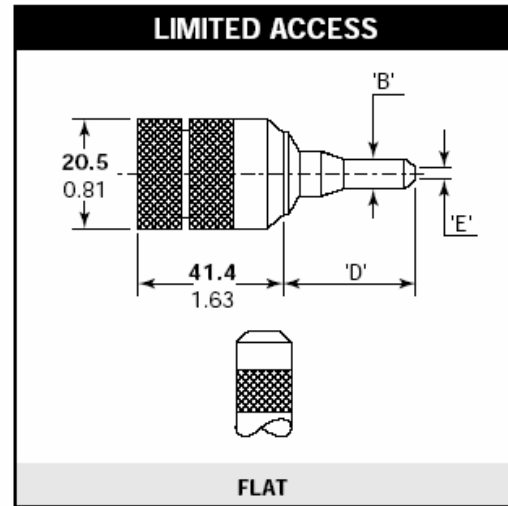
2. Nose Equipment and Mandrel Selection Guide

Choosing a Nose Jaw Assembly

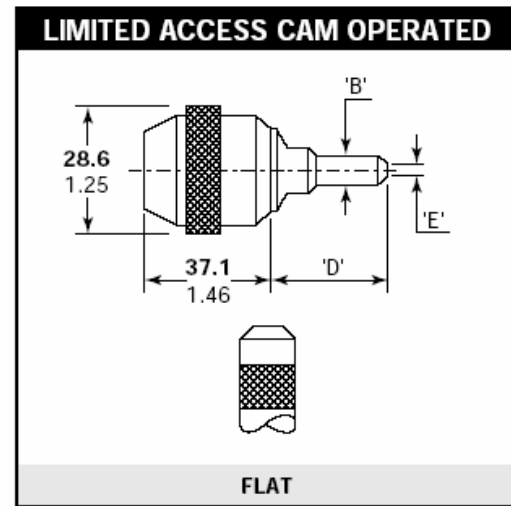
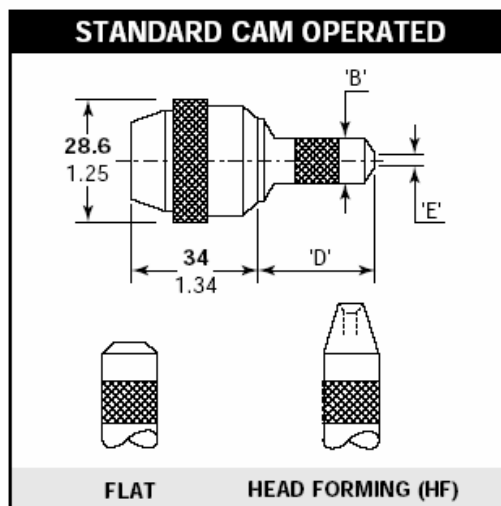
1. List the name, size and material of the fastener to be placed.
2. Look for this fastener in the first column of the nose jaw selection tables listed below. Use the appropriate table for imperial or metric units.
3. Looking right across the table take note of which nose jaws are available. ONLY those shown are available.
4. Select which is most suitable for your application by referring to the respective nose jaw drawing. If your application has no access restriction, you should select the standard shape with a flat end form with or without cam operation.



Available in 4 different end forms to place all fasteners (except Rivscrew). Suitable on applications with no or little access restriction.



Available as shown in NOSE JAW SELECTION TABLE. Allows access into very restrictive applications.



Available as shown in NOSE JAW SELECTION TABLE overleaf. Equivalent functions to the Standard and Limited Access above with the addition of a cam to ease and speed up the nose jaw opening thus the pod reloading procedure.

NOSE JAW SELECTION - IMPERIAL

The 'REF N°' column cross references with the 'REF N°' columns in the mandrel section. It identifies both the mandrel and mandrel follower spring required for a particular nose jaw with a specific fastener.

FASTENER	REF. N°	NOSE JAW					REF. N°	NOSE JAW				
		TYPE AND END FORM	PART N°	DIMENSIONS				TYPE AND END FORM	PART N°	DIMENSIONS		
				'B'	'D'	'E'				'B'	'D'	'E'
3/32" CHOBERT® & GROVIT®	1	STANDARD - FLAT	07150-03003	.36	1.30	.16	1	# STANDARD - UNIVERSAL	07150-03203	.36	1.33	.24
	1	STD. CAM OPERATED - FLAT	07170-04500	.36	1.30	.16	1	LTD. ACCESS CAM OPERATED	07177-03003	.20	1.18	.16
	2	STANDARD - TAPERED	07170-03103	.36	1.30	.16	3	LIMITED ACCESS	07274-01000	.22	1.07	.16
1/8" CHOBERT® & GROVIT®	4	STANDARD - FLAT	07150-03004	.41	1.18	.20	4	# STANDARD - UNIVERSAL	07150-03204	.41	1.22	.32
	4	STANDARD - TAPERED	07170-03104	.41	1.19	.20	4	STD. CAM OPERATED - FLAT	07170-04600	.41	1.18	.20
5/32" CHOBERT® & GROVIT®	5	STANDARD - FLAT	07150-03005	.48	1.30	.24	5	# STANDARD - UNIVERSAL	07150-03205	.48	1.35	.41
	5	STANDARD - TAPERED	07150-03105	.44	1.30	.24	5	STD. CAM OPERATED - FLAT	07170-04700	.48	1.30	.24
3/16" CHOBERT® & GROVIT®	6	STANDARD - FLAT	07150-03006	.56	1.18	.33	6	# STANDARD - UNIVERSAL	07150-03206	.56	1.24	.47
	6	STANDARD - TAPERED	07150-03106	.56	1.18	.33	6	STD. CAM OPERATED - FLAT	07170-04800	.56	1.18	.33
1/4" CHOBERT®	7	STANDARD - FLAT	07150-03008	.64	1.18	.39	7	STD. CAM OPERATED - FLAT	07170-04900	.64	1.18	.39
3/32" BRIV® Brass only	8	STANDARD - TAPERED	07170-03103	.36	1.30	.15	9	LTD. ACCESS CAM OPERATED	07177-03003	.20	1.18	.16
	9	LIMITED ACCESS	07274-01000	.22	1.07	.16	-	-	-	-	-	-
1/8" BRIV® Al. Alloy, Brass, Steel	10	STANDARD - FLAT	07150-03004	.41	1.18	.20	10	STANDARD - RECESSED	07170-03004	.41	1.20	.30
	10	STANDARD - TAPERED	07170-03104	.41	1.19	.20	-	-	-	-	-	-
5/32" BRIV® Al. Alloy, Brass, Steel	11	STANDARD - FLAT	07150-03005	.48	1.30	.24	11	STANDARD - RECESSED	07170-03005	.48	1.32	.41
5/32" BRIV® St. Steel only	12	STANDARD - FLAT	07150-03005	.48	1.30	.24	12	STANDARD - RECESSED	07170-03005	.48	1.32	.41
3/16" BRIV® Al. Alloy, Brass, Steel	13	STANDARD - FLAT	07150-03006	.56	1.18	.33	13	STANDARD - RECESSED	07170-03006	.56	1.20	.47
3/16" BRIV® St. Steel only	14	STANDARD - FLAT	07150-03006	.56	1.18	.33	14	STANDARD - RECESSED	07170-03006	.56	1.20	.47
6mm BRIV® Al. Alloy, Steel	15	STD. CAM OPERATED	07170-05600	.64	1.21	.52	15	STANDARD - FLAT	07170-05800	.64	1.21	.52
								-	-	-	-	-
3/32" AVLUG®	16	STANDARD - FLAT	07150-03003	.36	1.30	.16	16	STANDARD - TAPERED	07150-03103	.36	1.30	.16
	16	STD. CAM OPERATED - FLAT	07170-04500	.36	1.30	.16	-	-	-	-	-	-
1/8" AVLUG®	17	STANDARD - FLAT	07150-03004	.41	1.18	.20	17	STANDARD - TAPERED	07170-03104	.41	1.19	.20
	17	STD. CAM OPERATED - FLAT	07170-04600	.41	1.18	.20	-	-	-	-	-	-
2.5mm AVTRONIC®	18	STANDARD - FLAT	07150-03003	.36	1.30	.16	18	LTD. ACCESS CAM OPERATED	07271-08000	.41	1.18	.16
2.8mm AVTRONIC®	19	STANDARD - FLAT	07271-05600	.36	1.30	.16	20	LTD. ACCESS CAM OPERATED	07271-08100	.40	1.18	.16
2.8mm RIVSCREW®	21	STD. CAM OPERATED - HF	07271-03000	.41	1.18	.24	-	-	-	-	-	-
3.0mm RIVSCREW®	22	STD. CAM OPERATED - HF	07271-03000	.41	1.18	.24	-	-	-	-	-	-
3.5mm RIVSCREW®	23	STD. CAM OPERATED - HF	07271-03500	.41	1.18	.24	-	-	-	-	-	-
4.0mm RIVSCREW®	24	STD. CAM OPERATED - HF	07271-04000	.41	1.18	.25	-	-	-	-	-	-

- # These nose jaws are suitable for placing Chobert® fasteners with a Universal Head Form. When used on the equivalent size of Briv®, the highest possible clench is achieved. Note that when using Briv® fasteners, the maximum grip is reduced by approximately 0.015" (0.4 mm).

NOSE JAW SELECTION - METRIC

FASTENER	REF. N°	NOSE JAW					REF. N°	NOSE JAW				
		TYPE AND END FORM	PART N°	DIMENSIONS				TYPE AND END FORM	PART N°	DIMENSIONS		
				'B'	'D'	'E'				'B'	'D'	'E'
3/32" CHOBERT® & GROVIT®	1	STANDARD - FLAT	07150-03003	9.14	33.02	4.06	1	# STANDARD - UNIVERSAL	07150-03203	9.14	33.78	6.10
	1	STD. CAM OPERATED - FLAT	07170-04500	9.14	33.02	4.06	1	LTD. ACCESS CAM OPERATED	07177-03003	5.08	29.97	4.06
	2	STANDARD - TAPERED	07170-03103	9.14	33.02	5.08	3	LIMITED ACCESS	07274-01000	5.59	27.18	4.06
1/8" CHOBERT® & GROVIT®	4	STANDARD - FLAT	07150-03004	10.41	29.97	6.10	4	# STANDARD - UNIVERSAL	07150-03204	10.41	30.99	8.13
	4	STANDARD - TAPERED	07170-03104	10.41	30.23	6.10	4	STD. CAM OPERATED - FLAT	07170-04600	10.41	29.97	5.08
5/32" CHOBERT® & GROVIT®	5	STANDARD - FLAT	07150-03005	12.19	33.02	8.38	5	# STANDARD - UNIVERSAL	07150-03205	12.19	34.29	10.41
	5	STANDARD - TAPERED	07150-03105	11.18	33.02	8.38	5	STD. CAM OPERATED - FLAT	07170-04700	12.19	33.02	6.10
3/16" CHOBERT® & GROVIT®	6	STANDARD - FLAT	07150-03006	14.22	29.97	9.91	6	# STANDARD - UNIVERSAL	07150-03206	14.22	31.50	11.94
	6	STANDARD - TAPERED	07150-03106	14.22	29.97	3.81	6	STD. CAM OPERATED - FLAT	07170-04800	14.22	29.97	8.38
1/4" CHOBERT®	7	STANDARD - FLAT	07150-03008	16.26	29.97	4.06	7	STD. CAM OPERATED - FLAT	07170-04900	16.26	29.97	9.91
3/32" BRIV® Brass only	8	STANDARD - TAPERED	07170-03103	9.14	33.02	5.08	9	LTD. ACCESS CAM OPERATED	07177-03003	5.08	29.97	4.06
	9	LIMITED ACCESS	07274-01000	5.59	27.18	5.08	-	-	-	-	-	-
1/8" BRIV® Al. Alloy, Brass, Steel	10	STANDARD - FLAT	07150-03004	10.41	29.97	6.10	10	STANDARD - RECESSED	07170-03004	10.41	30.48	7.62
	10	STANDARD - TAPERED	07170-03104	10.41	30.23	6.10	-	-	-	-	-	-
5/32" BRIV® Al. Alloy, Brass, Steel	11	STANDARD - FLAT	07150-03005	12.19	33.02	8.38	11	STANDARD - RECESSED	07170-03005	12.19	33.53	10.41
5/32" BRIV® St. Steel only	12	STANDARD - FLAT	07150-03005	12.19	33.02	8.38	12	STANDARD - RECESSED	07170-03005	12.19	33.53	10.41
3/16" BRIV® Al. Alloy, Brass, Steel	13	STANDARD - FLAT	07150-03006	14.22	29.97	4.06	13	STANDARD - RECESSED	07170-03006	14.22	30.48	11.94
3/16" BRIV® St. Steel only	14	STANDARD - FLAT	07150-03006	14.22	29.97	4.06	14	STANDARD - RECESSED	07170-03006	14.22	30.48	11.94
6mm BRIV® Al. Alloy, Steel	15	STD. CAM OPERATED	07170-05600	16.33	30.65	13.14	15	STANDARD - FLAT	07170-05800	16.33	30.65	13.14
							-	-	-	-	-	-
3/32" AVLUG®	16	STANDARD - FLAT	07150-03003	9.14	33.02	4.06	16	STANDARD - TAPERED	07150-03103	9.14	33.02	4.06
	16	STD. CAM OPERATED - FLAT	07170-04500	9.14	33.02	4.06	-	-	-	-	-	-
1/8" AVLUG®	17	STANDARD - FLAT	07150-03004	10.41	29.97	5.08	17	STANDARD - TAPERED	07170-03104	10.41	29.97	5.08
	17	STD. CAM OPERATED - FLAT	07170-04600	10.41	29.97	5.08	-	-	-	-	-	-
2.5mm AVTRONIC®	18	STANDARD - FLAT	07150-03003	9.14	33.02	4.06	18	LTD. ACCESS CAM OPERATED	07271-08000	10.41	29.97	4.06
2.8mm AVTRONIC®	19	STANDARD - FLAT	07271-05600	9.14	33.02	4.06	20	LTD. ACCESS CAM OPERATED	07271-08100	10.16	29.97	4.06
2.8mm RIVSCREW®	21	STD. CAM OPERATED - HF	07271-03000	10.41	29.97	6.10	-	-	-	-	-	-
3.0mm RIVSCREW®	22	STD. CAM OPERATED - HF	07271-03000	10.41	29.97	6.10	-	-	-	-	-	-
3.5mm RIVSCREW®	23	STD. CAM OPERATED - HF	07271-03500	10.41	29.97	6.10	-	-	-	-	-	-
4.0mm RIVSCREW®	24	STD. CAM OPERATED - HF	07271-04000	10.41	29.97	6.35	-	-	-	-	-	-

These nose jaws are suitable for placing Chobert® fasteners with a Universal Head Form. When used on the equivalent size of Briv®, the highest possible clench is achieved. Note that when using Briv® fasteners, the maximum grip is reduced by approximately 0.015" (0.4 mm).

MANDREL FOLLOWER SPRINGS IDENTIFICATION AND ORIENTATION				
FASTENER		NOSE JAW (SEE NOSE EQUIPMENT SECTION)	MANDREL SIZE	MANDREL/MANDREL FOLLOWER SPRING AND FASTENER ASSEMBLY
NAME	SIZE			
BRIV®	3/32"	STANDARD TAPERED	ALL	
	3/32"	LIMITED ACCESS & LIMITED ACCESS CAM OPERATED	ALL	
	1/8"	ALL	ALL	
	5/32"	ALL	ALL	
	3/16"	ALL	ALL	
	6mm	STANDARD	ALL EXCEPT 3rd OVERSIZE	
CHOBERT® AVLUG® GROVIT®	3/32"	ALL EXCEPT STANDARD TAPERED, LIMITED ACCESS	ALL	
	3/32"	STANDARD TAPERED, LIMITED ACCESS	ALL	
	1/8"	ALL	ALL	
CHOBERT® GROVIT®	5/32"	ALL	ALL EXCEPT 3rd OVERSIZE	
	5/32"	ALL	3rd OVERSIZE	
	3/16"	ALL	ALL EXCEPT 2nd OVERSIZE	
	3/16"	ALL	2nd OVERSIZE	
CHOBERT®	1/4"	ALL	ALL	
RIVSCREW®	2.8mm 3mm 3.5mm 4mm	ALL	ALL	
AVSERT®	2.5mm	ALL	ALL	
	4 x 40 UNC			
	3mm 6 x 32 UNC	ALL	ALL	
AVTRONIC®	2.5mm	ALL	ALL	
	2.8mm	ALL EXCEPT LIMITED ACCESS	ALL	
	2.8mm	LIMITED ACCESS	ALL	

Mandrels and mandrel follower springs (see illustration above) need to be selected to suit the fastener type and size as well as the size of the hole in the application. Use of the wrong mandrel could increase the risk of breakage and wear of the mandrel head.

Feeding problems could occur if the wrong mandrel follower spring is used.

IMPORTANT

READ THE SAFETY INSTRUCTIONS CAREFULLY.

While a small amount of wear and marking will naturally occur through normal and correct use of mandrels, they must regularly be examined for excessive wear and marking, with particular attention to the head diameter, the tail jaw gripping area of the shank for heavy pitting of the shank and mandrel distortion. Mandrels which fail during use could forcibly exit the tool. It is the customer's responsibility to ensure that the mandrels are replaced before any excessive levels of wear and always before the maximum recommended number of placings. Contact your Avdel® representative who will let you know what that figure is by measuring the broach load of your application with our calibrated measuring tool.

These tools can also be purchased under part number 07900-09080, supplied with all necessary information for testing.

CHOBERT® AND GROVIT® - IMPERIAL

For mandrel or mandrel follower spring selection, follow instructions above.

FASTENER	REF. N°	HOLE SIZE	STANDARD MANDREL - GREEN					HOLE SIZE	1ST OVERSIZE MANDREL - YELLOW					SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.	
3/32" CHOBERT® & GROVIT®	1	AS REC.	.0725	07150-07003	.166	07150-09003	.071	-	-	-	-	-	-	07150-06803
	1	-	-	-	-	-	-	+0035	.076	-	-	07150-09103	.078	07150-06803
	2	AS REC.	.0725	07150-07003	.166	07150-09003	.071	-	-	-	-	-	-	07170-06873
	2	-	-	-	-	-	-	+0035	.076	-	-	07150-09103	.078	07170-06873
	3	AS REC.	.0725	07150-07003	.166	07150-09003	.071	-	-	-	-	-	-	07170-06903
	3	-	-	-	-	-	-	+0035	.076	-	-	07150-09103	.078	07170-06903
1/8" CHOBERT® & GROVIT®	4	AS REC.	.088	07150-07004	.216	07150-09004	.090	+004	.092	07150-07104	.237	07150-09104	.098	07150-06804
5/32" CHOBERT® & GROVIT®	5	AS REC.	.107	07150-07005	.244	07150-09005	.100	+008	.115	07150-07105	.284	07150-09105	.116	07170-06875
3/16" CHOBERT® & GROVIT®	6	AS REC.	.132	07150-07006	.247	07150-09006	.102	+014	.146	07150-07106	.320	07150-09106	.130	07170-06876
1/4" CHOBERT® & GROVIT®	7	AS REC.	.184	07150-07008	.268	07150-09008	.110	+012	.196	07150-07108	.330	07150-09108	.134	07150-06808

FASTENER	REF. N°	HOLE SIZE	2ND OVERSIZE MANDREL - BLUE					HOLE SIZE	3RD OVERSIZE MANDREL - RED					SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.	
3/32" CHOBERT® & GROVIT®	1	+0035	.076	07150-07103	.185	-	-	-	-	-	-	-	-	07150-06803
	2	+0035	.076	07150-07103	.185	-	-	-	-	-	-	-	-	07170-06873
	3	+0035	.076	07150-07103	.185	-	-	-	-	-	-	-	-	07170-06903
1/8" CHOBERT® & GROVIT®	4	+010	.098	07150-07204	.268	07150-09204	.110	+014	.102	07150-07304	2.88	07150-09304	.118	07150-06804
5/32" CHOBERT® & GROVIT®	5	+015	.122	07150-07205	.320	07150-09205	.130	-	-	-	-	-	-	07170-06875
	5	-	-	-	-	-	-	+025	.132	07150-07305	.372	07150-09305	.150	07150-06805
3/16" CHOBERT® & GROVIT®	6	+024	.156	07150-07206	.372	07150-09206	.150	-	-	-	-	-	-	07150-06806

The tables below list the part numbers for all mandrels and mandrel follower springs per fastener group of fasteners, i.e. Chobert® and Grovit®

While fastener sizes are always shown in their specific units, each table has been produced twice to offer dimensions in imperial and metric. These "Mandrel Selection" tables cross reference with the "Nose Jaw Selection" tables listed above through the "Ref No." column.

It is the diameter of the head at the end of a mandrel which when pulled through controls the expansion of the fastener body.

While there are different head shapes to suit different types of fasteners (see illustration) progressive head sizes are needed to reflect manufacturing tolerances on the diameter of the hole in your application so that the fastener always expands sufficiently to fill the hole.

Too large a mandrel head would over stress the mandrel and mandrels that fail during use could forcibly exit the tool. Selection tables are arranged in four "Mandrel Size" selections ranging from "Standard" to "3rd Oversize" each being color coded as per the end of the mandrel heads themselves.

CHOBERT® AND GROVIT® - METRIC

FASTENER	REF. N°	HOLE SIZE	STANDARD MANDREL - GREEN					HOLE SIZE	1ST OVERSIZE MANDREL - YELLOW					SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.	
3/32" CHOBERT® & GROVIT®	1	AS REC.	1.84	07150-07003	4.22	07150-09003	1.80	-	-	-	-	-	-	07150-06803
	1	-	-	-	-	-	-	+0.09	1.93	-	-	07150-09103	1.98	07150-06803
	2	AS REC.	1.84	07150-07003	4.22	07150-09003	1.80	-	-	-	-	-	-	07170-06873
	2	-	-	-	-	-	-	+0.09	1.93	-	-	07150-09103	1.98	07170-06873
	3	AS REC.	1.84	07150-07003	4.22	07150-09003	1.80	-	-	-	-	-	-	07170-06903
	3	-	-	-	-	-	-	+0.09	1.93	-	-	07150-09103	1.98	07170-06903
1/8" CHOBERT® & GROVIT®	4	AS REC.	2.24	07150-07004	5.49	07150-09004	2.29	+1.0	2.34	07150-07104	6.02	07150-09104	2.49	07150-06804
5/32" CHOBERT® & GROVIT®	5	AS REC.	2.72	07150-07005	6.20	07150-09005	2.54	+2.0	2.92	07150-07105	7.21	07150-09105	2.95	07170-06875
3/16" CHOBERT® & GROVIT®	6	AS REC.	3.35	07150-07006	6.27	07150-09006	2.59	+3.5	3.71	07150-07106	8.13	07150-09106	3.30	07170-06876
1/4" CHOBERT® & GROVIT®	7	AS REC.	4.67	07150-07008	6.81	07150-09008	2.79	+3.0	4.98	07150-07108	8.38	07150-09108	3.40	07150-06808

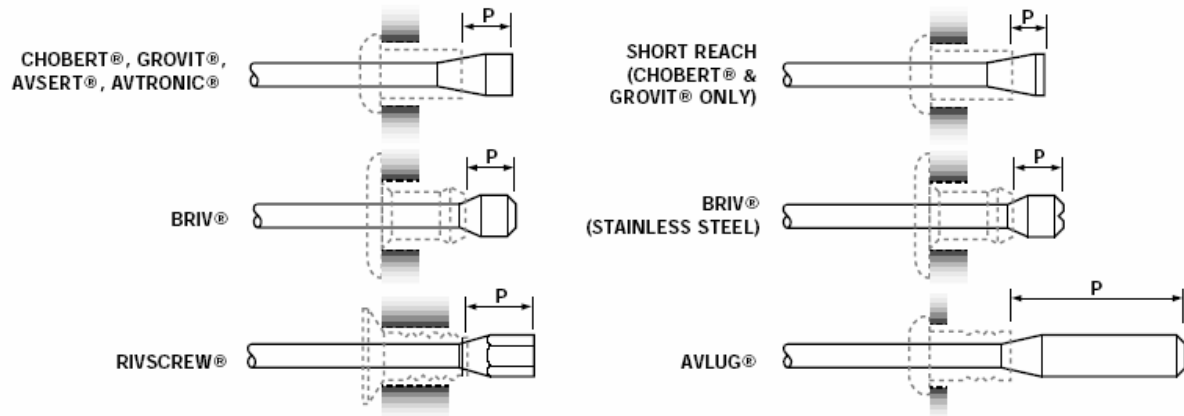
FASTENER	REF. N°	HOLE SIZE	2ND OVERSIZE MANDREL - BLUE					HOLE SIZE	3RD OVERSIZE MANDREL - RED					SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	# S/R MANDREL PART N°	P MAX.	
3/32" CHOBERT® & GROVIT®	1	+0.09	1.93	07150-07103	4.70	-	-	-	-	-	-	-	-	07150-06803
	2	+0.09	1.93	07150-07103	4.70	-	-	-	-	-	-	-	-	07170-06873
	3	+0.09	1.93	07150-07103	4.70	-	-	-	-	-	-	-	-	07170-06903
1/8" CHOBERT® & GROVIT®	4	+2.5	2.49	07150-07204	6.81	07150-09204	2.79	+3.5	2.59	07150-07304	7.32	07150-09304	3.00	07150-06804
5/32" CHOBERT® & GROVIT®	5	+3.8	3.10	07150-07205	8.13	07150-09205	3.30	-	-	-	-	-	-	07170-06875
3/16" CHOBERT® & GROVIT®	5	-	-	-	-	-	-	+6.3	3.35	07150-07305	9.45	07150-09305	3.81	07150-06805
	6	+6.0	3.96	07150-07206	9.45	07150-09206	3.81	-	-	-	-	-	-	07150-06806

Choosing a Mandrel

MANDREL HEAD TYPES AND 'P' LENGTH

Mandrels for stainless steel Briv® are easily identifiable by a 'V' cut in the end of the mandrel heads.

When using curved nose jaws, mandrels have to be bent by hand to match the curvature of the nose jaw, thus ensuring good feed of fasteners.



BRIV® - METRIC

FASTENER	REF. N°	HOLE SIZE	STANDARD MANDREL - GREEN			HOLE SIZE	1ST OVERSIZE MANDREL - YELLOW			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
3/32" BRIV® Brass only	8	AS REC.	1.83	07150-07013	3.02	+10	1.93	07150-07113	3.12	07170-06873
	9	AS REC.	1.83	07150-07013	3.02	+10	1.93	07150-07113	3.12	07170-06903
1/8" BRIV® Al. Alloy, Brass, Steel	10	AS REC.	2.34	07271-07414	3.05	+13	2.46	07271-07514	3.20	07150-06814
5/32" BRIV® Al. Alloy, Brass, Steel	11	AS REC.	2.79	07150-07015	3.45	+13	2.92	07150-07115	3.61	07170-06875
5/32" BRIV® St. Steel only	12	AS REC.	3.05	07170-07805	3.20	+13	3.18	07170-07825	3.35	07170-06875
3/16" BRIV® Al. Alloy, Brass, Steel	13	AS REC.	3.58	07150-07016	3.99	+13	3.71	07150-07116	4.17	07170-06876
3/16" BRIV® St. Steel only	14	AS REC.	3.89	07170-07806	3.81	+13	4.01	07170-07826	3.96	07170-06876
6mm BRIV® Al. Alloy, Steel	15	AS REC.	4.54	07150-07018	4.18	+13	4.67	07150-07118	4.34	07150-06808

FASTENER	REF. N°	HOLE SIZE	2ND OVERSIZE MANDREL - BLUE			HOLE SIZE	3RD OVERSIZE MANDREL - RED			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
3/32" BRIV® Brass only	8	+20	2.01	07150-07213	3.20	-	-	-	-	07170-06873
	9	+20	2.01	07150-07213	3.20	-	-	-	-	07170-06903
1/8" BRIV® Al. Alloy, Brass, Steel	10	+25	2.59	07271-07614	3.38	-	-	-	-	07150-06814
5/32" BRIV® Al. Alloy, Brass, Steel	11	+25	3.05	07150-07215	3.78	-	-	-	-	07170-06875
3/16" BRIV® Al. Alloy, Brass, Steel	13	+25	3.84	07150-07216	4.32	+30	3.85	07150-07316	4.39	07170-06876
6mm BRIV® Al. Alloy, Steel	15	+25	4.79	07150-07218	4.49	-	-	-	-	07150-06808

To find the correct part number of a mandrel for a particular application, read the instructions below after you have gathered the following information as per example alongside. Answers for the example are shown in *grey italic*.

FASTENER NAME	<i>example</i>	<i>Chobert*</i>
FASTENER SIZE		<i>1/8"</i>
DATASHEET		<i>Series 1125</i>
APPLICATION HOLE SIZE		<i>0.1335"</i>
CLEARANCE BEHIND APPLICATION		<i>Infinite</i>
'REF.N°' FROM NOSE JAW SELECTION TABLE		<i>5 (standard flat)</i>

- Subtract the minimum hole size recommended (AS REC.) in the fastener datasheet from the actual application hole size. *-example: 0.005.*
 - Turn to the page with the 'Mandrel Selection' table for your fastener, selecting either the imperial or the metric dimensions table (pages 18 to 20). *-example: page 18.*
 - Starting with the 'Standard Mandrel - Green' section, find your fastener size in the left-hand column. *-example 1/8" Chobert® & Grovit®.*
 - If you selected a nose jaw with which to place your fastener, you should now be able to find a line within your fastener section with the same 'Ref No.' as that from the 'Nose Jaw Selection' table. *-example: 5.* This is your line 'Ref. No.' in which you will find both your mandrel and mandrel follower spring part number. This line continues into the second half of the table for the '2nd' and '3rd' oversize mandrels.
 - Scan along the line to the 'hole size' columns and select which ever is the nearest or equal to the figure calculated in step one. You may now read the mandrel part number next to the 'hole size'. *-example: 07150-06104*
 - For Chobert® and Grovit® only, most mandrels are also available in a 'short reach' version (see illustration below). Short reach mandrels are used to minimise the possibility of the mandrel head contacting a read obstruction. This would result in the underside of the fastener head not seating properly on the application surface, causing a lack on clench in the joint.
 - Whichever size mandrel you settle on, you will also need to check the 'P' figure against that mandrel is adequate. 'P' is the clearance required for the mandrel head at the back of the application IN ADDITION to the length of the fastener protruding through the application, as shown in the illustration
 - You may now read the corresponding mandrel follower spring part number in the right-hand column of the table. *-example: 07150-06804.*
- In all cases, satisfactory clenching of the joint should be assessed particularly if the size of the hole in your application is very close to the next oversize hole condition, when it will be safe to select the greater size of mandrel to obtain a higher clench. REMEMBER that this will increase the broach load and reduce the mandrel life.

BRIV® - IMPERIAL

For mandrel or mandrel follower spring selection, follow instructions overleaf.

FASTENER	REF. N°	HOLE SIZE	STANDARD MANDREL - GREEN			HOLE SIZE	1ST OVERSIZE MANDREL - YELLOW			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
3/32" BRIV® Brass only	8	AS REC.	.072	07150-07013	.119	+ .004	.076	07150-07113	.123	07170-06873
	9	AS REC.	.072	07150-07013	.119	+ .004	.076	07150-07113	.123	07170-06903
1/8" BRIV® Al. Alloy, Brass, Steel	10	AS REC.	.092	07271-07414	.120	+ .005	.097	07271-07514	.126	07150-06814
5/32" BRIV® Al. Alloy, Brass, Steel	11	AS REC.	.110	07150-07015	.136	+ .005	.115	07150-07115	.142	07170-06875
5/32" BRIV® St. Steel only	12	AS REC.	.120	07170-07805	.126	+ .005	.125	07170-07825	.132	07170-06875
3/16" BRIV® Al. Alloy, Brass, Steel	13	AS REC.	.141	07150-07016	.157	+ .005	.146	07150-07116	.164	07170-06876
3/16" BRIV® St. Steel only	14	AS REC.	.153	07170-07806	.150	+ .005	.158	07170-07826	.156	07170-06876
6mm BRIV® Al. Alloy, Steel	15	AS REC.	.179	07150-07018	.165	+ .005	.184	07150-07118	.171	07150-06808

FASTENER	REF. N°	HOLE SIZE	2ND OVERSIZE MANDREL - BLUE			HOLE SIZE	3RD OVERSIZE MANDREL - RED			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
3/32" BRIV® Brass only	8	+ .008	.079	07150-07213	.126	-	-	-	-	07170-06873
	9	+ .008	.079	07150-07213	.126	-	-	-	-	07170-06903
1/8" BRIV® Al. Alloy, Brass, Steel	10	+ .010	.102	07271-07614	.133	-	-	-	-	07150-06814
5/32" BRIV® Al. Alloy, Brass, Steel	11	+ .010	.120	07150-07215	.149	-	-	-	-	07170-06875
3/16" BRIV® Al. Alloy, Brass, Steel	13	+ .010	.151	07150-07216	.170	+ .012	.153	07150-07316	.173	07170-06876
6mm BRIV® Al. Alloy, Steel	15	+ .010	.189	07150-07218	.177	-	-	-	-	07150-06808

AVLUG®, AVSERT®, AVTRONIC® & RIVSCREW® - IMPERIAL

For mandrel or mandrel follower spring selection, follow instructions on page 18.

FASTENER	LINE N°	HOLE SIZE	STANDARD MANDREL - GREEN			HOLE SIZE	1ST OVERSIZE MANDREL - YELLOW			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
3/32" AVLUG®	16	AS REC.	.076	07150-07603	.353	+.003	.079	07150-07703	.368	07150-06803
1/8" AVLUG®	17	AS REC.	.098	07150-07604	.593	-	-	-	-	07150-06804
2.5mm AVTRONIC®	18	AS REC.	.070	07170-07025	.140	+.003	.073	07170-07125	.140	07150-06803
2.8mm AVTRONIC®	19	AS REC.	.070	07170-07028	.150	+.003	.082	07170-07128	.150	07170-06528
	20	AS REC.	.079	07170-07028	.150	+.003	.082	07170-07128	.150	07170-06528
2.8mm RIVSCREW®	21	AS REC.	* .065	07271-07030	.127	-	-	-	-	07271-06630
3.0mm RIVSCREW®	22	AS REC.	* .065	07271-07030	.127	-	-	-	-	07271-06630
3.5mm RIVSCREW®	23	AS REC.	* .0825	07271-07035	.132	-	-	-	-	07271-06635
4.0mm RIVSCREW®	24	AS REC.	* .103	07271-07140	.150	-	-	-	-	07271-06640

* These Dimensions are Across Flats

FASTENER	LINE N°	HOLE SIZE	2ND OVERSIZE MANDREL - BLUE			HOLE SIZE	3RD OVERSIZE MANDREL - RED			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
2.5mm AVTRONIC®	18	+.006	.076	07170-07225	.140	-	-	-	-	07150-06803
2.8mm AVTRONIC®	19	+.006	.085	07170-07728	.150	-	-	-	-	07170-06528
	20	+.006	.085	07170-07228	.150	-	-	-	-	07170-06528

AVLUG®, AVSERT®, AVTRONIC® & RIVSCREW® - METRIC

FASTENER	LINE N°	HOLE SIZE	STANDARD MANDREL - GREEN			HOLE SIZE	1ST OVERSIZE MANDREL - YELLOW			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
3/32" AVLUG®	16	AS REC.	1.93	07150-07603	8.97	+.10	2.01	07150-07703	9.35	07150-06803
1/8" AVLUG®	17	AS REC.	2.49	07150-07604	15.06	-	-	-	-	07150-06804
2.5mm AVTRONIC®	18	AS REC.	1.78	07170-07025	3.56	+.07	1.85	07170-07125	3.56	07150-06803
2.8mm AVTRONIC®	19	AS REC.	2.01	07170-07028	3.81	+.07	2.08	07170-07128	3.81	07170-06528
	20	AS REC.	2.01	07170-07028	3.81	+.07	2.08	07170-07128	3.81	07170-06528
2.8mm RIVSCREW®	21	AS REC.	*1.65	07271-07030	3.23	-	-	-	-	07271-06630
3.0mm RIVSCREW®	22	AS REC.	*1.65	07271-07030	3.23	-	-	-	-	07271-06630
3.5mm RIVSCREW®	23	AS REC.	*2.10	07271-07035	3.35	-	-	-	-	07271-06635
4.0mm RIVSCREW®	24	AS REC.	*2.62	07271-07140	3.81	-	-	-	-	07271-06640

* These Dimensions are Across Flats

FASTENER	LINE N°	HOLE SIZE	2ND OVERSIZE MANDREL - BLUE			HOLE SIZE	3RD OVERSIZE MANDREL - RED			SPRING PART N°
			HEAD Ø	MANDREL PART N°	P MAX.		HEAD Ø	MANDREL PART N°	P MAX.	
2.5mm AVTRONIC®	18	+.15	1.93	07170-07225	3.56	-	-	-	-	07150-06803
2.8mm AVTRONIC®	19	+.15	2.16	07170-07228	3.81	-	-	-	-	07170-06528
	20	+.15	2.16	07170-07228	3.81	-	-	-	-	07170-06528

3. Service Kit

For all servicing we recommend the use of the service kit (part number 07900-04750(S)).

SERVICE KIT					
ITEM PART N°	DESCRIPTION	N° OFF	ITEM PART N°	DESCRIPTION	N° OFF
07900-00002	SPANNER ASSEMBLY	1	07900-00409	12mm X 13mm A/F SPANNER	1
07900-00006	SPATULA	1	07900-00433	SPANNER 24 & 26mm OPEN ENDED	1
07900-00008	7/16in X 1/2in A/F SPANNER	1	07900-00434	SPANNER 32 & 30mm OPEN ENDED	1
07900-00012	9/16 X 5/8 A/F SPANNER (1/18in thick)	1	07900-00446	EXTRACTOR	1
07900-00013	HEXAGON WRENCH 1/8" A/F	1	07900-00488	SPANNER ASSEMBLY	1
07900-00194	JAW HOUSING KEY	1	07900-00496	HEXAGONAL WRENCH 2.5mm A/F	1
07900-00201	HEXAGON WRENCH 0.050in A/F	1	07900-00520	3/8 DIAMETER ROD	1
07900-00224	HEXAGON WRENCH 4mm A/F	1	07900-00521	1/4in DIAMETER ROD	1
07900-00225	HEXAGON WRENCH 5mm A/F	1	07900-00522	ASSEMBLY SPANNER FOR HEAD PISTON	1
07900-00226	HEXAGON WRENCH 6mm A/F	1	07900-00576	ASSEMBLY BULLET	1
07900-00237	3/8 B.S.W SPANNER	1	07900-00577	PISTON ASSEMBLY ROD	1
07900-00351	HEXAGON WRENCH 3mm A/F	1	07900-00953	SLEEVE	1
07900-00392	8mm A/F SPANNER	1	07900-00954	PUSH ROD	1
07900-00393	15mm x 14mm A/F SPANNER	1	07992-00020	80gm MOLYLITHIUM GREASE E.P.3753	1 tin
07900-00394	17mm A/F SPANNER	1			

Note: Spanner sizes are measured 'across flats' unless otherwise specified.